

## Article by Augustus Goss, April 1906

**TRENTON, N. J., APRIL, 1906. Alexander Graham Bell and His New Flying Machine**

BY AUGUSTUS GOSS Silent worker, 1906

DR. BELL AS HE LOOKS TODAY

DR. BELL'S KITE

DR. BELL AS HE LOOKED THIRTY YEARS AGO

RECENT experiments of Alexander Graham Bell seem to have established the fact that the world is a step nearer to the solution of the problem of navigating the air than ever before. Professor Bell has been conducting a series of tests on his Cape Breton estate of Beinn Bhreagh for several years, and quite recently he has succeeded in getting his latest designed kite, the Frost King, to lift a man weighing 165 pounds to a height of thirty feet and to support him there steadily.

The kite used in this experiment is constructed of 1,300 tetrahedral cells, having a total area of 752 square feet of silk, making a supporting surface of 400 square feet. It bore aloft not only its own weight of sixty-one pounds, but also a load comprising flying lines, dangling ropes and a rope ladder, making sixty-two pounds more, together with the ascensionist, in all a total a 288 pounds. The kite remained under perfect control of the operator, and its descent was slow and steady. It alighted on the ground without perceptible jar and with no injury to its delicate cells. Its enthusiastic inventor hails its performance as another milestone on the road toward complete success in the scheme of navigating the upper regions with bodies heavier than air.

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It is now about seven years since Professor Bell became so thoroughly a believer in the possibility of making a successful flying machine that he abandoned all other enterprises and devoted himself exclusively to efforts in that direction. He started out with the foundation principle that a kite, if properly constructed and fitted with an engine and propeller, would become the model of the flying machine of the future. With that end in view, he has build hundreds of kites of every conceivable pattern, and the end is not yet.

At first thought the exploiting of kites seems rather undignified for a full grown man, more especially for a man who has done such wonders in scientific attainment as Professor Bell. It must not be forgotten, however, that so distinguished a man as Sir Isaac Newton spent a good deal of time over the blowing of soap bubbles with excellent results, and that the pioneer of American scientific discovery, the renowned Dr. Franklin himself, made a convenience of the humble kite. "Strength and lightness" has been the long sought for combination, the happy coalition which every air navigator has been craving for years.

There is a well established law which, put into homely language is to the effect that the weight increases as the cube, where as the surface increases only as the square. That means, for instance, that if one were building kites of increasing size, every time the surface was multiplied by two the weight would be multiplied by three. Thus the weight would always go on increasing so much more rapidly than the expanse, the kites remaining of the same proportional strength. A size is soon reached where the weight proves fatal and the kite cannot be made to ascend.

When he first began, to experiment, Professor Bell built kites of the box variety in increasing sizes. He very soon came in conflict with the law of limitation. Nothing short of a cyclone would lift his kite from the ground, even though the size were quite moderate. For a long time everything he tried failed, and every attempt he made to soar upward was frustrated by the law which all preceding scientists had declared inexorable.

At last after he had exhausted about all of his ingenuity and a good share of his patience Professor Bell hit upon a scheme by means of which he actually circumvents this stubborn law of mathematics. It is such a simple trick, after one knows it, that not to have guessed it seems absurd. Take three straws, for illustrative purposes only, and join their ends so as to form a triangle. Then at each angle or corner of the figure so formed erect another straw of the length of those already used and bring their free ends together at the top. That will produce the framework of one of Professor Bell's greatly discussed tetradedral cells. It is in a reality a frame having four bases or sides. Now cover any two sides—they are all precisely alike—with silk and the result is a one celled Bell kite.

It is by joining cell to cell that the inventor builds up his largest structures and so overcomes the law that weight must increase faster than the spread of surface. It is in this way that his mammoth kites, those having hundreds of square feet of surface, remain in every respect proportional to those of smaller size. These cells possess remarkable strength even when the pieces of which they are composed are exceedingly frail. They are not simply braced in two directions like a triangle, but in three like a solid. The cells are wonderfully light in proportion to their expanse of surface. A frame of this pattern strong enough to lift a man weighs but twelve pounds. The most encouraging thing is that these larger kites are the best fliers, and their stability even in the most fitful of winds is surprising.

In Professor Bell's earlier experiments the framework of the cells was made of black spruce, but since his later machines are designed for man lifting purposes aluminum is used. Thus far the kites have been started on their upward flight precisely as a toy kite is started—by being pulled forward against the air current. The inventor declares that if toy kites rise by being pulled forward larger machines will rise by being propelled in the same direction. His latest test has made it certain that a kite loaded with a propeller and steering apparatus can be flown, and it looks now as if the aeroplane type of flying machine were destined to outstrip the gas bag device in the race for practical results.

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Professor Bell's career as a scientific investigator reads like a fairy tale. Just before he made known his invention of the telephone he was a teacher on a small stipend in a school for deaf-mutes in Boston. That was over thirty years ago, and within a few years from that memorable announcement—so wonderful that it seemed incredible at the time—his check was good for millions. In one marvelous leap he took his place at the head of the list of scientists in America and became a millionaire philanthropist, spending his fortune lavishly for the betterment of deaf-mutes and applying his genius to the discovery of some means to remedy their lamentable state.

But his desire to unravel the secrets of nature has ripened into a passion which no mere acquisition of wealth or position can satisfy. It is his fondest wish that he may live long enough to solve for mankind the problem which he believes to be just within his grasp and which to his clairvoyant sight is no longer veiled in impenetrable mystery.

Augustus Goss.